If the thickness of the model is comparable with its other dimensions, we are close to the Boussinesq problem. In this case the real axial stress is calculated as

$$\sigma^{e}_{zB} = k(z)\sigma_{zF}, \tag{11}$$

where

$$k(z) = \frac{\sigma_{zB}}{\sigma_{zF}} \tag{12}$$

is calculated from Eqs. (2) and (6). Thus, Eq. (12) takes into account the three-dimensional character of the stress distribution.

CONCLUSIONS

It has been shown that with the same load fringe patterns of the Flamant and Boussinesq problems are similar. However, Figs. 2 and 3 show that if the load is concentrated at a point then interpretation of the fringe pattern as if the problem is two-dimensional, leads to erroneous results. Near the upper surface ($z < 0.75$) simplified interpretation underestimates the value of σ_z while at $z > 0.75$ it is vice versa. The analysis given above may help to understand the meaning of integrated fringe patterns in similar cases and to take into account the three-dimensional character of the stress distribution.

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